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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/576,495

Applicant(s)

YAMAZAKI ET AL.

Examiner

BUMSUK WON

Art Unit

2889

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-47 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date 4/20/2006
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5-9, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki (US 2002/0104995).

Regarding claim 1, Yamazaki discloses a display device (figure 2) comprising: a first transistor (101) including a first gate electrode (114); a second transistor (102) including a second gate electrode (115) which is connected to a first drain electrode (111) of the first transistor; an insulating film (117) provided so as to cover the first and the second transistors; a first electrode (122) of an electroluminescent layer (123), which is connected to a second drain electrode (112) of the second transistor; and a second electrode (124) of the electroluminescent layer, which is provided over the electroluminescent layer (123).

Regarding claim 2, Yamazaki discloses a display device (figure 2) comprising: a first transistor (101) including a first gate electrode (114); a second transistor (102) including a second gate electrode (115) which is connected to a first drain electrode (111) of the first transistor; an insulating film (117) provided so as to cover the first and the second transistors; a first electrode (122) of an electroluminescent layer (123), which is connected to a second drain electrode (112) of the second transistor; and a second electrode (124) of the electroluminescent layer, which is provided over the electroluminescent layer (123).

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The examiner notes that the claim limitation of a first gate electrode formed by a droplet discharge method is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (MPEP 2113).

Regarding claim 5, the examiner notes that the claim limitation of the first and the second gate electrodes is formed over an area treated with base pretreatment is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (MPEP 2113).

Regarding claim 6, the examiner notes that the claim limitation of the base pretreatment is performed by using photocatalyst is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (MPEP 2113).

Regarding claim 7, Yamazaki discloses the gate electrodes and the drain electrodes contains tungsten (paragraph 83).

Regarding claim 8, the examiner notes that the claim limitation of ink-jet is used for the droplet discharge method is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (MPEP 2113).

Regarding claim 9, Yamazaki discloses the transistors include an amorphous semiconductor (paragraph 77).

Regarding claim 11, the examiner notes "a television receiver" is a recitation of the intended use of the claimed invention which must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Here, the claim merely recites "a television receiver" without any structural specificity.

Regarding claim 12, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film (125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Kobayashi (US 2003/0168966).

Regarding claim 3, Yamazaki discloses a display device (figure 2) comprising: a first transistor (101) including a first gate electrode (114); a second transistor (102) including a second gate electrode (115) which is connected to a first drain electrode (111) of the first transistor; a first insulating film (117)

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provided so as to cover the first and the second transistors; a second insulating film (125) covering the first insulating film; a first electrode (122) of an electroluminescent layer (123), which is connected to a second drain electrode (112) of the second transistor; and a second electrode (124) of the electroluminescent layer, which is provided over the electroluminescent layer (123).

Yamazaki does not specifically disclose a second insulating film containing nitrogen.

Kobayashi discloses a display device having an insulating film containing nitrogen (paragraph 65), for the purpose of effectively insulating between conductors.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have an insulating film containing nitrogen as disclosed by Kobayashi in the device disclosed by Yamazaki, for the purpose of effectively insulating between conductors.

The examiner notes that the claim limitation of a first gate electrode formed by a droplet discharge method is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (MPEP 2113).

Regarding claim 4, Yamazaki discloses a display device (figure 2) comprising: a first transistor (101) including a first gate electrode (114); a second transistor (102) including a second gate electrode (115) which is connected to a first drain electrode (111) of the first transistor; a first insulating film (117) provided so as to cover the first and the second transistors; a second insulating film (125) covering the first insulating film; a first electrode (122) of an electroluminescent layer (123), which is connected to a second drain electrode (112) of the second transistor; and a second electrode (124) of the electroluminescent layer, which is provided over the electroluminescent layer (123), wherein the cathode, an electron injection layer, an electron transport layer, a light emitting layer, a hole transport layer, and a hole injection layer are stacked in order in the electroluminescent layer (paragraph 198).

Yamazaki does not specifically disclose a second insulating film containing nitrogen.

Kobayashi discloses a display device having an insulating film containing nitrogen (paragraph 65), for the purpose of effectively insulating between conductors.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have an insulating film containing nitrogen as disclosed by Kobayashi in the device disclosed by Yamazaki, for the purpose of effectively insulating between conductors.

The examiner notes that the claim limitation of a first gate electrode formed by a droplet discharge method is drawn to a process of manufacturing which is incidental to the claimed apparatus. It is well established that a claimed apparatus cannot be distinguished over the prior art by a process limitation. Consequently, absent a showing of an unobvious difference between the claimed product and the prior art, the subject product-by-process claim limitation is not afforded patentable weight (MPEP 2113).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Suh (US 2005/0088106).

Regarding claim 10, Yamazaki does not specifically disclose a protective circuit is provided for the scan line and the signal line.

Suh discloses a display device having a protective circuit is provided for the scan line and the signal line (paragraphs 35-36), for the purpose enhancing robustness and reliability of the display device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a protective circuit provided for the scan line and the signal line as disclosed by Suh in the device disclosed by Yamazaki, for the purpose enhancing robustness and reliability of the display device.

Claims 13 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Miyazawa (US 2003/0127974).

Regarding claim 13, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a

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thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film (125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Yamazaki does not specifically disclose the conductive films being formed by a droplet discharge method.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

Regarding claim 43, Miyazawa discloses a droplet discharge method (paragraph 164). The reason for combining is same as claim 13.

Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Kobayashi (US 2004/0065345).

Regarding claim 14, Yamazaki does not specifically disclose a step of pretreating where the first conductive film is formed.

Kobayashi discloses a method for fabricating a display device including a step of pretreating (paragraph 71), for the purpose of effectively cleaning the substrate before applying a layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a step of pretreating where the first conductive film is formed as disclosed by Kobayashi in the method disclosed by Yamazaki, for the purpose of effectively cleaning the substrate before applying a layer.

Regarding claim 15, Yamazaki does not specifically disclose a step of pretreating where the second conductive film is formed.

Kobayashi discloses a method for fabricating a display device including a step of pretreating (paragraph 71), for the purpose of effectively cleaning the substrate before applying a layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a step of pretreating where the first conductive film is formed as disclosed by Kobayashi in the method disclosed by Yamazaki, for the purpose of effectively cleaning the substrate before applying a layer.

Regarding claim 16, Kobayashi discloses the pretreatment is performed by using photocatalyst (paragraph 71). The reason for combining is same as claim 14.

Regarding claim 17, Kobayashi discloses the pretreatment is performed by using photocatalyst (paragraph 71). The reason for combining is same as claim 15.

Claims 18-22, 25, 30, 31, 36, 37, 44 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Miyazawa (US 2003/0127974) and Kiguchi (US 2003/0210361).

Regarding claim 18, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film (125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Yamazaki does not specifically disclose the conductive films being formed by a droplet discharge method, and forming masks over the semiconductor film; patterning the semiconductor film using the masks; forming a first and a second source electrodes and a first and a second drain electrodes over the patterned semiconductor films by a droplet discharge method.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

Kiguchi discloses a method for fabricating a display device including using masking method and etching method to form patterns (paragraph 38), for the purpose of effectively patterning layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa, and using masking method and etching method to form patterns as disclosed by Kiguchi in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

Regarding claims 19 and 20, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film (125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Yamazaki does not specifically disclose the conductive films being formed by a droplet discharge method, and forming masks over the semiconductor film; patterning the semiconductor film using the masks; forming a first and a second source electrodes and a first and a second drain electrodes over the patterned semiconductor films by a droplet discharge method.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

Kiguchi discloses a method for fabricating a display device including using masking method and etching method to form patterns (paragraph 38), for the purpose of effectively patterning layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa, and using masking method and etching method to form patterns as disclosed by Kiguchi in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

Regarding claim 21, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film (125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Yamazaki does not specifically disclose the conductive films being formed by a droplet discharge method, and forming masks over the semiconductor film; patterning the semiconductor film using the masks; forming a first and a second source electrodes and a first and a second drain electrodes over the patterned semiconductor films by a droplet discharge method.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

Kiguchi discloses a method for fabricating a display device including using masking method and etching method to form patterns (paragraph 38), for the purpose of effectively patterning layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa, and using masking method and etching method to form patterns as disclosed by Kiguchi in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

Regarding claim 22, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film

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(125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Yamazaki does not specifically disclose the conductive films being formed by a droplet discharge method, and forming masks over the semiconductor film; patterning the semiconductor film using the masks; forming a first and a second source electrodes and a first and a second drain electrodes over the patterned semiconductor films by a droplet discharge method.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

Kiguchi discloses a method for fabricating a display device including using masking method and etching method to form patterns (paragraph 38), for the purpose of effectively patterning layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa, and using masking method and etching method to form patterns as disclosed by Kiguchi in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

Regarding claim 25, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film (125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Yamazaki does not specifically disclose the conductive films being formed by a droplet discharge method, and forming masks over the semiconductor film; patterning the semiconductor film using the

masks; forming a first and a second source electrodes and a first and a second drain electrodes over the patterned semiconductor films by a droplet discharge method.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

Kiguchi discloses a method for fabricating a display device including using masking method and etching method to form patterns (paragraph 38), for the purpose of effectively patterning layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa, and using masking method and etching method to form patterns as disclosed by Kiguchi in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

Regarding claim 30, Yamazaki discloses channel protective films (133) are formed in contact with the semiconductor film (116) over the first and the second gate electrode (114 and 115).

Regarding claim 31, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film (125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Yamazaki does not specifically disclose the conductive films being formed by a droplet discharge method, and forming masks over the semiconductor film; patterning the semiconductor film using the masks; forming a first and a second source electrodes and a first and a second drain electrodes over the patterned semiconductor films by a droplet discharge method.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

Kiguchi discloses a method for fabricating a display device including using masking method and etching method to form patterns (paragraph 38), for the purpose of effectively patterning layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa, and using masking method and etching method to form patterns as disclosed by Kiguchi in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

Regarding claim 36, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film (125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Yamazaki does not specifically disclose the conductive films being formed by a droplet discharge method, and forming masks over the semiconductor film; patterning the semiconductor film using the masks; forming a first and a second source electrodes and a first and a second drain electrodes over the patterned semiconductor films by a droplet discharge method.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

Kiguchi discloses a method for fabricating a display device including using masking method and etching method to form patterns (paragraph 38), for the purpose of effectively patterning layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa, and using masking method and etching method to form patterns as disclosed by Kiguchi in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

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Regarding claim 37, Yamazaki discloses a method for fabricating a display device (figure 2), comprising the steps of: forming a first conductive film (110-113) by applying a composition containing a conductor; forming a semiconductor film (116) over the first conductive film; forming second conductive films (114, 115) over the semiconductor film by applying a composition containing a conductor, whereby a thin film transistor (101, 102) is formed; forming a first insulating film (117) so as to cover the thin film transistor; forming a first electrode (122) over the first insulating film; forming a second insulating film (125) so as to cover an end portion of the first electrode; forming an electroluminescent layer (123) in an opening provided for the second insulating film; and forming a second electrode (124) so as to cover the electroluminescent layer (123).

Yamazaki does not specifically disclose the conductive films being formed by a droplet discharge method, and forming masks over the semiconductor film; patterning the semiconductor film using the masks; forming a first and a second source electrodes and a first and a second drain electrodes over the patterned semiconductor films by a droplet discharge method.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

Kiguchi discloses a method for fabricating a display device including using masking method and etching method to form patterns (paragraph 38), for the purpose of effectively patterning layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa, and using masking method and etching method to form patterns as disclosed by Kiguchi in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

Regarding claim 44, Yamazaki discloses a method for fabricating a display device including steps of forming a conductive film (110-113) and an insulating film (117) over an object (100).

Yamazaki does not specifically disclose preparing a treatment system includes droplet discharge and planarization.

Miyazawa discloses a method for fabricating a display device including a droplet discharge method (paragraph 164), for the purpose of enhancing manufacturability.

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Kiguchi discloses a method for fabricating a display device including using masking method and etching method to form patterns (paragraph 38), for the purpose of effectively patterning layers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a droplet discharge method disclosed in Miyazawa, and using masking method and etching method to form patterns as disclosed by Kiguchi in the method disclosed by Yamazaki, for the purpose of enhancing manufacturability.

Regarding claim 47, Kiguchi discloses using ink jet method (paragraph 4). The reason for combining is same as claim 18.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Miyazawa and Kiguchi, in further view of Natsuo (JP 2001-281438) which is cited in the IDS.

Regarding claim 23, Yamazaki in view of Miyazawa and Kiguchi does not specifically disclose the first insulating film is repellent to the columnar organic film.

Natsuo discloses a method for fabricating a device including an insulating film is repellent to the organic film (paragraphs 39 and 54), for the purpose of effectively forming organic film layer in the device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have an insulating film is repellent to the organic film as disclosed by Natsuo in the method disclosed by Yamazaki in view of Miyazawa and Kiguchi, for the purpose of effectively forming organic film layer in the device.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Miyazawa (US 2003/0127974) and Kiguchi (US 2003/0210361), in further view of Lee (US 2003/0165714).

Regarding claim 24, Yamazaki in view of Miyazawa and Kiguchi does not specifically disclose the columnar organic film is removed by water washing.

Lee discloses a method for fabricating a device including removing organic film by water (paragraph 45), for the purpose of reducing manufacturing process and cost.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have removing organic film by water as disclosed by Lee in the method disclosed by Yamazaki in view of Miyazawa and Kiguchi, for the purpose of reducing manufacturing process and cost.

Claims 26-29, 32-35, 41, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Miyazawa (US 2003/0127974) and Kiguchi (US 2003/0210361), in further view of Kobayashi(US 2004/0065345).

Regarding claim 26, Yamazaki in view of Miyazawa and Kiguchi does not specifically disclose a step of pretreating where the first conductive film is formed.

Kobayashi discloses a method for fabricating a display device including a step of pretreating (paragraph 71), for the purpose of effectively cleaning the substrate before applying a layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a step of pretreating where the first conductive film is formed as disclosed by Kobayashi in the method disclosed by Yamazaki in view of Miyazawa and Kiguchi, for the purpose of effectively cleaning the substrate before applying a layer.

Regarding claim 27, Yamazaki in view of Miyazawa and Kiguchi does not specifically disclose a step of pretreating where the second conductive film is formed.

Kobayashi discloses a method for fabricating a display device including a step of pretreating (paragraph 71), for the purpose of effectively cleaning the substrate before applying a layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a step of pretreating where the first conductive film is formed as disclosed by Kobayashi in the method disclosed by Yamazaki in view of Miyazawa and Kiguchi, for the purpose of effectively cleaning the substrate before applying a layer.

Regarding claim 28, Kobayashi discloses the pretreatment is performed by using photocatalyst (paragraph 71). The reason for combining is same as claim 26.

Regarding claim 29, Kobayashi discloses the pretreatment is performed by using photocatalyst (paragraph 71). The reason for combining is same as claim 27.

Regarding claim 32, Yamazaki in view of Miyazawa and Kiguchi does not specifically disclose a step of pretreating where the first conductive film is formed.

Kobayashi discloses a method for fabricating a display device including a step of pretreating (paragraph 71), for the purpose of effectively cleaning the substrate before applying a layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a step of pretreating where the first conductive film is formed as disclosed by Kobayashi in the method disclosed by Yamazaki in view of Miyazawa and Kiguchi, for the purpose of effectively cleaning the substrate before applying a layer.

Regarding claim 33, Yamazaki in view of Miyazawa and Kiguchi does not specifically disclose a step of pretreating where the second conductive film is formed.

Kobayashi discloses a method for fabricating a display device including a step of pretreating (paragraph 71), for the purpose of effectively cleaning the substrate before applying a layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a step of pretreating where the first conductive film is formed as disclosed by Kobayashi in the method disclosed by Yamazaki in view of Miyazawa and Kiguchi, for the purpose of effectively cleaning the substrate before applying a layer.

Regarding claim 34, Kobayashi discloses the pretreatment is performed by using photocatalyst (paragraph 71). The reason for combining is same as claim 32.

Regarding claim 35, Kobayashi discloses the pretreatment is performed by using photocatalyst (paragraph 71). The reason for combining is same as claim 33.

Regarding claim 38, Yamazaki in view of Miyazawa and Kiguchi does not specifically disclose a step of pretreating where the first conductive film is formed.

Kobayashi discloses a method for fabricating a display device including a step of pretreating (paragraph 71), for the purpose of effectively cleaning the substrate before applying a layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a step of pretreating where the first conductive film is formed as disclosed by

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Kobayashi in the method disclosed by Yamazaki in view of Miyazawa and Kiguchi, for the purpose of effectively cleaning the substrate before applying a layer.

Regarding claim 39, Yamazaki in view of Miyazawa and Kiguchi does not specifically disclose a step of pretreating where the second conductive film is formed.

Kobayashi discloses a method for fabricating a display device including a step of pretreating (paragraph 71), for the purpose of effectively cleaning the substrate before applying a layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a step of pretreating where the first conductive film is formed as disclosed by Kobayashi in the method disclosed by Yamazaki in view of Miyazawa and Kiguchi, for the purpose of effectively cleaning the substrate before applying a layer.

Regarding claim 40, Kobayashi discloses the pretreatment is performed by using photocatalyst (paragraph 71). The reason for combining is same as claim 38.

Regarding claim 41, Kobayashi discloses the pretreatment is performed by using photocatalyst (paragraph 71). The reason for combining is same as claim 39.

Regarding claim 45, Yamazaki in view of Miyazawa and Kiguchi does not specifically disclose a step of pretreating where the first conductive film is formed.

Kobayashi discloses a method for fabricating a display device including a step of pretreating (paragraph 71), for the purpose of effectively cleaning the substrate before applying a layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a step of pretreating where the first conductive film is formed as disclosed by Kobayashi in the method disclosed by Yamazaki in view of Miyazawa and Kiguchi, for the purpose of effectively cleaning the substrate before applying a layer.

Regarding claim 46, Kobayashi discloses the pretreatment is performed by using photocatalyst (paragraph 71). The reason for combining is same as claim 45.

Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki in view of Akedo (US 2001/0044259).

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Regarding claim 42, Yamazaki does not specifically disclose a surface of the first insulating film is planarized by spraying a gas.

Akedo discloses a method for fabricating a device including a step of planarization by spraying gas (claim 6), for the purpose of reducing cost of process as well as enhancing planarization of the layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a step of planarization by spraying gas as disclosed by Akedo in the method disclosed by Yamazaki, for the purpose of reducing cost of process as well as enhancing planarization of the layer.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BUMSUK WON whose telephone number is (571)272-2713. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minh Toan Ton can be reached on 571-272-2303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Bumsuk Won/
Examiner, Art Unit 2889